

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method for performing photolithography, comprising:
providing a spatial light modulator with data representing a portion of an image to be photolithographically transferred to a substrate, the spatial light modulator comprising light modulation elements;

transferring the portion of the image from a first set of the light modulation elements onto an area of the substrate; and

transferring the portion of the image from a second set of the light modulation elements onto the area of the substrate;

wherein the area is an area corresponding to the portion of the image and selected to bear the portion of the image, wherein the data includes a set of data that defines the portion of the image, and wherein, for each said transferring, the associated set of light modulation elements uses said set of data to transfer the portion of the image onto the area.

2. (Original) The method according to claim 1, further comprising:

dividing the image into image sections; and

dividing the image sections into image subsections, the portion of the image transferred to the substrate corresponding to at least one of the image subsections.

3. (Original) The method according to claim 2, further comprising:

dividing the light modulation elements into light modulation banks, each light modulation bank being capable of transferring one of the image subsections.

4. (Currently Amended) The method according to claim 1, wherein said transferring the portion of the image from the first set of light modulation elements further comprises:

loading the set of data representing the portion of the image into the first set of light modulation elements; and

altering the state of ones of the first set of light modulation elements in response to the set of data.

5. (Currently Amended) The method according to claim 4, wherein the first set of light modulation elements includes a defective light modulation element, and wherein said transferring the portion of the image from the second set of light modulation elements further comprises:

placing one of the light modulation elements in the second set of light modulation elements corresponding to the defective light modulation element in the first set of light modulation elements in the correct state as a function of the set of data loaded into the second set of light modulation elements.

6. (Original) The method of claim 1, further comprising:

transferring the portion of the image from at least a third set of the light modulation elements onto the area of the substrate.

7. (Currently Amended) A method for performing photolithography, comprising:

positioning a substrate having a photosensitive surface in relation to a spatial light modulator comprising light modulation elements;

exposing an area of the photosensitive surface with a portion of an image in response to respective states of a first set of the light modulation elements;

altering the positional relationship between the substrate and the spatial light modulator; and

exposing the area of the photosensitive surface with the portion of the image in response to respective states of a second set of the light modulation elements;

wherein the area is an area corresponding to the portion of the image and selected to bear the portion of the image, wherein the portion of the image is defined by a set of data, and wherein, for each said exposing, the associated set of light modulation elements uses said set of data to expose the area with the portion of the image.

8. (Original) The method according to claim 7, further comprising:

achieving grayscale in the image on the area of the photosensitive surface using both said exposings.

9. (Original) The method according claim 7, further comprising:

integrating the total energy from each said exposing on the area of the photosensitive surface.

10. (Original) The method according to claim 7, further comprising:

exposing the area of the photosensitive surface with the portion of the image in response to respective states of a third set of the light modulation elements.

11. (Currently Amended) A photolithography apparatus, comprising:

light modulation elements, including a first set of said light modulation elements ~~operable~~ to photolithographically transfer a portion of an image onto an area of a substrate,

and a second set of said light modulation elements ~~operable~~ to photolithographically transfer the portion of the image onto the area of a substrate; and

memory elements in communication with respective ones of said light modulation elements, said memory elements being configured to store data representing the portion of the image;

wherein the area is an area corresponding to the portion of the image and selected to bear the portion of the image, wherein the data includes a set of data that defines the portion of the image, and wherein, for each said transfer, the associated set of light modulation elements uses said set of data to transfer the portion of the image onto the area.

12. (Original) The photolithography apparatus according to claim 11, wherein the image is divided into image sections and the image sections are divided into image subsections, and the portion of the image corresponds to one of the image subsections.

13. (Original) The photolithography apparatus according to claim 12, wherein said light modulation elements are divided into sections, each light modulation element section being capable of transferring one of the image subsections, the first set of light modulation elements being one of the light modulation element sections and the second set of light modulation elements being another one of the light modulation element sections.

14. (Original) The photolithography apparatus according to claim 13, wherein said light modulation elements are arranged in an array having rows and columns.

15. (Original) The photolithography apparatus according to claim 14, wherein the first and second sets of light modulation elements include one or more respective ones of the rows.

16. (Original) The photolithography apparatus according to claim 14, wherein the first and second sets of light modulation elements include one or more respective ones of the columns.

17. (Original) The photolithography apparatus according to claim 11, wherein said light modulation elements comprise liquid crystal material.

18. (Original) The photolithography apparatus according to claim 17, wherein said light modulation elements further comprise:

a common electrode configured to receive a common electrode signal for said light modulation elements; and

pixel electrodes configured to receive the data stored in said respective memory elements.

19. (Original) The photolithography apparatus according to claim 11, wherein said light modulation elements comprise micromirrors.

20. (Original) The photolithography apparatus according to claim 11, wherein the first set of light modulation elements includes a defective light modulation element, and wherein one of the light modulation elements in the second set of light modulation elements

corresponding to the defective light modulation element in the first set of light modulation elements is not defective.

21. (Original) The photolithography apparatus according to claim 11, wherein a third set of light modulation elements is operable to photolithographically transfer the portion of the image onto the area of the substrate.

22. (Currently Amended) A photolithography system for transferring an image to a substrate having a photosensitive surface, said system comprising:

a spatial light modulator including ~~light modulation elements~~, a first set of [the] light modulation elements ~~operable~~ to transfer a portion of an image onto an area of a substrate, and a second set of [the] light modulation elements ~~operable~~ to transfer the portion of the image onto the area of a substrate; and

a stage operable to move one of said spatial light modulator and the substrate relative to the other;

wherein the area is an area corresponding to the portion of the image and selected to bear the portion of the image, wherein the portion of the image is defined by a set of data, and wherein, for each said transfer, the associated set of light modulation elements uses said set of data to transfer the portion of the image onto the area.

23. (Original) The photolithography apparatus according to claim 22, further comprising:

a laser optically coupled to said spatial light modulator to illuminate said spatial light modulator with light.

24. (Original) The photolithography apparatus according to claim 23, wherein the first and second sets of light modulation elements minimize spatial variations in the intensity of the light transferred to the substrate.

25. (Currently Amended) The photolithography system according to claim 22, wherein the light modulation elements further include respective memory elements configured to store the set of data representing the respective portion of the image, the light modulation elements being alterable in response to the data stored in the respective memory elements.